

SUMMARY OF THE 2006 U.S. NORTH AND SOUTH PACIFIC ALBACORE TROLL FISHERIES

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INTRODUCTION

Albacore (*Thunnus alalunga*) is a commercially valuable member of the family Scombridae that is harvested throughout the temperate latitudes of the North and South Pacific by fisheries from various nations (Table 1). Immature albacore tend to congregate in surface waters along the productive edges of oceanic fronts in the North Pacific transition zone (Laurs and Lynn, 1977) where they are targeted by surface fisheries, including the U.S. troll fishery.

A total of 65,198 metric tons (t) of albacore were harvested from the North Pacific in 2006, which is below the average annual harvest of approximately 74,300 t since 1952. Japanese fisheries have traditionally harvested the greatest amount of albacore within the North Pacific, accounting for approximately 73% of the total albacore landed by all fisheries (since 1952). The U.S. albacore fisheries annually harvest approximately 21% of the total North Pacific albacore catch. U.S. troll vessels have fished for albacore in the North Pacific since the early 1900's (Clemens and Craig, 1965), using artificial lures with barbless hooks.

Cooperative surveys between National Marine Fisheries Service (NMFS) and the American Fishermen's Research Foundation (AFRF) began in 1971 which led to the expansion of the U.S. troll fishery to areas north of Hawaii and west of the International Dateline (Laurs, et al., 1975b). In recent years, the North Pacific albacore troll season has begun as early as mid-April in areas northwest of Midway Atoll. In July and August, fishing effort expands to the east, towards the west coast of North America. Fishing areas along the west coast of North America extend from Vancouver Island, Canada to southern California. Fishing can continue into November if weather permits and albacore remain available to troll gear.

Albacore are also harvested in the South Pacific by several nations (Table 2). Taiwan harvests the largest proportion of albacore caught annually in the South Pacific (40% since 1963). The annual U.S. portion of the South Pacific albacore catch has averaged 7% since its inception. U.S. troll vessels began exploratory fishing operations for albacore in areas east of New Zealand in 1986, which lead to the development of the U.S. albacore troll fishery in the South Pacific (Laurs et al., 1987) during the austral summer months (November through April). U.S. troll vessels that participate in the South Pacific fishery depart from the U.S. west coast or Hawaii after the end of the North Pacific albacore season and travel to American Samoa or Tahiti to prepare for the South Pacific season. The U.S. South Pacific albacore troll fishing areas extend from the International Dateline to approximately 110°W between 30°S and 50°S. At the

end of the season (March or April), most U.S. troll vessels unload in American Samoa, Fiji, or Tahiti and then travel to Hawaii or the U.S. west coast to prepare for the next North Pacific fishing season.

This report presents summaries of the catch, logbook, and length-frequency information collected from the U.S. albacore troll fleet during the 2006 North Pacific and the 2005-2006 South Pacific albacore fishing seasons. Data from previous North Pacific seasons, South Pacific seasons, and from other fisheries (where available) are included for comparison. Electronic copies of this report and for the years 1995 to 2005 are available on the internet at <http://swfsc.noaa.gov/FRD-CommercialFisheries.aspx>. The agencies currently involved in the collection of logbook, length-frequency, and catch information from U.S. Pacific albacore troll fisheries are NMFS's Southwest Fisheries Science Center (SWFSC), Southwest Regional Office (SWRO), Pacific Islands Fisheries Science Center (PIFSC), Pacific Islands Regional Office (PIRO), Western Fishboat Owners Association (WFOA), American Fishermen's Research Foundation (AFRF), Pacific States Marine Fisheries Commission (PSMFC), the Pacific Coast Fisheries Information Network (PacFIN), foreign fishery agencies where troll vessels unload and the state fisheries agencies of California, Oregon, and Washington.

DATA COLLECTED

Total annual catch data from the various fisheries that harvest albacore in the Pacific Ocean are available from 1952 to 2006. Daily catch and effort data are obtained directly from logbooks submitted by albacore fishermen. The collection of logbook and catch data from the South Pacific fishery began in 1986. The collection of voluntary logbook data from the U.S. North Pacific albacore troll fishery began in 1954 (Laurs et al., 1975a). The U.S. West Coast Highly Migratory Species Fisheries Management Plan (HMS FMP) was implemented in April, 2005. This HMS FMP requires all U.S. fishing vessels targeting highly migratory species (such as albacore) in the Pacific to obtain a federal permit and submit copies of their fishing logbook to NMFS for each trip. Logbooks were distributed to fishermen prior to the 2006 North and 2005-2006 South Pacific albacore seasons.

Samplers in the ports of Ilwaco, Washington; Newport, Astoria, and Charleston, Oregon; Terminal Island, California; and Pago Pago, American Samoa collect length-frequency data by measuring fish as they are unloaded from catcher vessels. The collection of length-frequency data from the U.S. North Pacific albacore troll fishery began in 1951. The collection of length-frequency data from the U.S. South Pacific albacore troll fishery began in 1987.

Sea surface temperature (SST) data for the North Pacific are obtained from NOAA's National Oceanographic Data Center (NODC) through NOAA's CoastWatch West Coast Regional Node (<http://coastwatch.pfel.noaa.gov/index.html>). The SST data were summarized at SWFSC to obtain monthly isotherms at 1° resolution.

Catch-Per-Unit Effort (CPUE) is used as an indication of relative abundance of albacore available to troll gear, or a measure of fishing success. It is expressed in numbers of fish caught per day fished for the U.S. troll fishery. Catch (in numbers of fish) and effort (in days fished) from logbook data were summarized by 10-day and 1°-square strata in which there was at least

one day of fishing effort (Kleiber and Perrin, 1991), then averaged for the season. Average CPUE is calculated as follows:

$$Average\ CPUE = \frac{\sum_{i=1}^n \frac{C_i}{E_i}}{n}$$

Where C_i is the total sampled catch in the i^{th} stratum, E_i is the total sampled effort in the i^{th} stratum, and n is the total number of strata. Fishing effort in the albacore troll fisheries is measured in number of fishing days, and is estimated by the following equation:

$$Effort(days) = Catch(pounds) \div [CPUE(\frac{fish}{day}) \times AverageWeight(\frac{pounds}{fish})]$$

Logbook sampling coverage is expressed as the ratio of catches from sampled trips (those trips from which logbook data were received) to total catches. Unloading information (which includes total catch from each trip) is not completely available from past seasons. For consistent comparison of sampling coverage between seasons, sampled catches are estimated by multiplying numbers of fish caught by the average weight of those fish (recorded in logbooks) and summing these estimates from sampled logbooks. For this reason logbook sampling coverages for 2005 and later years (Tables 3 and 4) are not 100% despite the mandatory logbook requirement of the HMS FMP.

Length-frequency sampling coverage is expressed as the ratio of the number of fish sampled (measured) to the total estimated number of fish landed for the season. The total number of fish landed for the season is estimated by dividing total catch by the average weight of fish landed. The length-weight relationship for North Pacific albacore from Bartoo and Foreman (1993) was used to estimate weights from fork lengths.

TOTAL CATCH AND EFFORT

Total catch from the 2006 U.S. North Pacific albacore troll fishery increased 50% to 12,590t from 8,413 t in 2005 (Table 1). An estimated 604 U.S. troll vessels fished in the 2006 North Pacific fishery (Table 3), a 12% increase from 541 troll vessels that fished in 2005. U.S. troll vessels fished an estimated 21,778 days during the 2006 North Pacific albacore season, a decrease from the 25,298 days fished in 2005. The average price paid for albacore caught by troll vessels in 2006 was \$1,917 per short ton (\$0.96 per pound). This is a 9% decrease from the average price of \$2,108 per short ton (\$1.05 per pound) paid in 2005.

Since the South Pacific albacore troll fishery begins in November or December and can continue into April of the following year, total annual landings are computed differently than total seasonal landings. Annual totals (Table 2) are a combination of catches from portions of two consecutive South Pacific albacore seasons (January –December). The annual catch of South Pacific albacore by troll gear increased from 487 t in 2005 to 585 t in 2006 (this value does not include catches made in December, 2006). Seasonal totals (Table 4) include catches that occurred between November through April of the following year. The 2005-2006 season catch by U.S. troll vessels decreased 17% to 601 t from 725 t in the 2004-2005 season (Table 4). Eight U.S. troll vessels participated in the 2005-2006 South Pacific fishery, the same number of

vessels that fished in the 2004-2005 season. Total fishing effort for the 2005-2006 South Pacific albacore season is estimated at 1,266 days, a slight decrease from the 1,494 days fished in the 2004-2005 season. The average price paid for albacore caught by troll vessels in the South Pacific in the 2005-2006 season was \$2,162 per short ton (\$1.08 per pound), an 8% decrease from the average price of \$2,342 per short ton (\$1.17 per pound) paid in the 2004-2005 season.

Albacore may be discarded during a fishing trip because they are undersized (less than 58 cm fork length or 9 pounds), damaged, or have spoiled due to refrigeration problems. During the 2006 North Pacific troll season, 67 trips (of 1,164 sampled trips) recorded a total of 2,302 albacore discarded. During the 2005-2006 South Pacific troll season, 4 trips (of 10 sampled trips) recorded a total of 227 albacore discarded. Albacore troll vessels catch minor amounts of other pelagic fish species that are usually caught during transit to or from the fishing grounds. The most common species that are incidentally caught include skipjack tuna (*Katsuwonus pelamis*), mahi mahi (*Coryphaena hippurus*), yellowtail (*Seriola lalandi*), Eastern Pacific bonito (*Sarda chiliensis*), bigeye tuna (*Thunnus obesus*), and bluefin tuna (*Thunnus thynnus*).

DISTRIBUTION OF CATCHES AND SEA-SURFACE TEMPERATURES

Based on 2006 logbook data, North Pacific albacore troll fishing areas extended from 168°E to the west coasts of the U.S. and Canada, between approximately 30°N and 55°N (Figure 1). The offshore troll fishery was relatively unproductive in 2006; however, the highest offshore catch areas were distributed between 132°W and 133°W from 44°N to 45°N. The highest catch areas along the west coast were off Northern California, Oregon, and Washington from 44°N to 47°N, between 125°W and 129°W. These catches generally were distributed between the 11°C (52°F) and 17°C (63°F) isotherms. Figures 2a through 2f illustrate the distribution of isotherms and the locations of temperature fronts (areas of closely-spaced isotherms) in relation to catch areas.

Albacore catches recorded during the 2005-2006 South Pacific season were summarized by season and month in 5° squares of latitude and longitude (Figures 3a through 3f). The highest albacore catches of the season were made between 155°W and 170°W, from 40°S to 45°S (Figure 3a). The highest catches from December through February were distributed between 155°W and 170°W from 40°S to 45°S (Figures 3b through 3d). In March and April high catch areas shifted to the west, ranging between 140°W and 130°W from 35°S to 45°S (Figures 3e and 3f).

CATCH-PER-UNIT EFFORT

The average CPUE for the North Pacific albacore troll fishery declined by approximately 68% between 1962 and 1977, then remained relatively stable between 1977 and 1991 (Figure 4). The CPUE increased between 1991 and 1998 with large fluctuations between 1995 and 1999. CPUE gradually increased up to 85 fish per day between 2000 and 2004, dropped considerably to 47 fish per day in 2005, but increased approximately 91% in 2006 to 90 fish per day (Table 3). The eleven-year average from 1996 through 2006 is 67 fish per day. CPUEs were summarized by 1° squares of latitude and longitude. The highest CPUEs for the 2006 North Pacific season

were distributed in areas of the Pacific Northwest (Figure 5). High CPUE values ranged from 208 to 534 fish per day and were spread between 126°W and 134°W, from 43°N to 49°N.

The average CPUE for the U.S. South Pacific albacore troll fishery declined between 1987 and 1993 (Figure 4), followed by a peak of 147 fish per day in 1995. The CPUE remained relatively stable at 70 fish per day through 2000. CPUE values were highly variable between 2000 and 2005. The CPUE for the 2005-2006 season is 64 fish per day, the same as the 2004-2005 season. The eleven-year average for CPUE in the South Pacific from 1996 through 2006 is 71 fish per day. CPUE values for the 2005-2006 season were summarized by 5° squares of latitude and longitude. The highest values ranged from 91 fish per day to 129 fish per day and were located between 120°W and 125°W, from 40°S to 45°S and between 155°W and 170°W, from 35°S to 45°S (Figure 6).

LOGBOOK SAMPLING COVERAGE

Despite the new logbook submission requirements established under the HMS FMP, not all of the logbooks were received from all of the trips that were completed by U.S. troll vessels in 2006. Logbooks were received from 1,164 trips (of an estimated 1,875 total trips) in the 2006 North Pacific albacore troll season. Logbook sampling coverage rates are estimated as hauled logbook catches divided by total catch. For this reason coverage rates may not be 100% even if all logbooks are received. Estimated catches from submitted logbooks totaled 8,254 tons, resulting in a logbook sampling coverage rate of 66% (Table 3).

Logbook data from the 2005-2006 South Pacific albacore troll season were collected from all of the ten trips made by U.S. vessels. Estimated catches from submitted logbooks totaled 564 tons, resulting in a logbook sampling rate of 94% (Table 4).

LENGTH FREQUENCIES

Port samplers measured 43,203 albacore out of an estimated 1,964,605 albacore landed during the 2006 North Pacific season, resulting in a length-frequency sampling coverage of 2.2% (Table 3). This is a slight increase over the 2005 sampling coverage of 1.7%. Fork lengths of sampled albacore ranged from 48 cm (5 lb or 2.3 kg) to 99 cm (44 lb or 20 kg) and averaged 68 cm (14.1 lb or 6.4 kg; Table 3). The histogram of length-frequency samples from the 2006 North Pacific season has a single-mode distribution with the peak at 66 cm (13 lb or 5.9 kg; Figure 7). The majority of albacore that are taken in both the North and South Pacific troll fisheries range from two to five years old. Small albacore (less than 58 cm fork length) may not be adequately represented in the length-frequency data collected from the North Pacific fishery due to discarding of small fish.

Port samplers measured 403 of the estimated 80,869 albacore landed during the 2005-2006 South Pacific troll season (Table 4). The length-frequency sampling coverage rate for this season is 0.5%, compared to 0.1% in the 2004-2005 season. Fork lengths of sampled albacore ranged from 51 cm (6 lb or 2.7 kg) to 97 cm (41 lb or 18.6 kg) and averaged 71 cm (16.4 lb or 7.4 kg; Table 4). The histogram of fish sampled in the 2005-2006 season has a dominant mode at 65 cm (12.4 lb or 5.6 kg; Figure 8).

SUMMARY

Total landings from the 2006 U.S. North Pacific albacore troll fishery increased by 50% from the previous year's fishery. A total of 604 vessels landed 12,590 t during the 2006 season compared to 541 vessels that landed 8,413 t in 2005. Total effort decreased to 21,778 days in 2006. The highest catches of albacore in the North Pacific generally were distributed between the 11°C (52°F) and 17°C (63°F) isotherms. The average CPUE for the 2006 North Pacific season increased from 47 fish per day in 2005 to 90 fish per day, with most successful catch areas widely spread between 37°N to 49°N, and 125°W and 145°W. Logbook sampling coverage for the North Pacific albacore fishery increased from 65% in the 2005 season to 66% in 2006. The average fork length of albacore measured during the 2006 North Pacific season is 68 cm (14.1 lb or 6.4 kg), although fish less than 58 cm fork length (9 lb or 4.0 kg) may not be adequately represented in the North Pacific length-frequency samples. Length-frequency sampling coverage increased to 2.2% during 2006 compared to 1.7% in 2005.

Total catch from the 2005-2006 South Pacific season decreased from 725 t in the 2004-2005 season to 601 t. The annual catch increased from 487 t in 2005 to 585 t in 2006. Eight U.S. troll vessels fished 1,266 days in the 2005-2006 season compared to eight vessels that fished 1,494 days in the 2004-2005 season. The areas of highest catch for the 2005-2006 South Pacific season ranged between 155°W and 160°W, from 40°S to 45°S and between 165°W and 170°W, from 40°S to 45°S. The CPUE for the 2005-2006 season remained the same as the 2004-2005 season at 64 fish per day. Logbook sampling coverage for the 2005-2006 South Pacific albacore troll fishery increased to 94% from 55% in the 2004-2005 season. The average fork length of albacore measured during the 2005-2006 season is 71 cm (16.4 lb or 7.4 kg). Length-frequency sampling coverage increased from 0.1% in the 2004-2005 season to 0.5% in the 2005-2006 season.

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Table 1. North Pacific albacore catches (in metric tons) by fisheries, 1987-2006¹. Blank indicates no effort. -- indicates data not available. 0 indicates less than 1 metric ton. Provisional estimates are in parentheses.

YEAR	CANADA	JAPAN						KOREA	MEXICO	TAIWAN	U.S.							OTHERS		GRAND TOTAL ⁴
	TROLL	GILL NET	LONG LINE	POLE & LINE	PURSE SEINE	TROLL	UNSP. GEAR	LONG LINE	UNSP. GEAR	LONG LINE ²	POLE & LINE	GILL NET	LONG LINE	PURSE SEINE	SPORT	TROLL	TROLL/HANDLINE	LONG LINE ³	TROLL	
1987	104	6,698	14,702	19,082	1,205		155	549	7	--	158	5	150		74	2,766	6			48,993
1988	155	9,074	14,731	6,216	1,208		134	409	15	--	598	15	307		64	4,212	9			45,562
1989	140	7,437	13,104	8,629	2,521		393	150	2	40	54	4	248		160	1,860	36			44,175
1990	302	6,064	15,789	8,532	1,995		249	6	2	4	115	29	177	71	24	2,603	15			53,698
1991	139	3,401	17,046	7,103	2,652		392	3	2	12	0	17	312	0	6	1,845	72			37,324
1992	363	2,721	19,049	13,888	4,104		1,527	15	10	--	0	0	334	0	2	4,572	54			54,847
1993	494	287	29,966	12,797	2,889		867	32	11	5	0	0	438		25	6,254	71			54,136
1994	1,998	263	29,600	26,389	2,026		799	45	6	83	0	38	544		106	10,978	90		158	73,336
1995	1,763	282	29,075	20,981	1,177	856	81	440	5	4,280	80	52	882		102	8,045	177		137	68,416
1996	3,316	116	32,493	20,272	581	815	117	333	21	7,596	24	83	1,185	11	88	16,938	188	1,735	505	86,417
1997	2,168	359	38,951	32,238	1,068	1,585	123	319	53	9,119	73	60	1,653	2	1,018	14,252	133	2,824	404	106,402
1998	4,177	206	35,812	22,926	1,554	1,190	88	288	8	8,617	79	80	1,120	33	1,208	14,410	88	5,871	286	98,042
1999	2,734	289	33,364	50,369	6,872	891	127	107	23	8,186	60	149	1,542	48	3,621	10,060	331	6,307	261	125,342
2000	4,531	67	30,046	21,549	2,408	645	171	414	79	8,842	69	55	940	4	1,798	9,645	120	3,654	490	85,529
2001	5,248	117	28,819	29,430	974	416	96	82	22	8,684	139	94	1,295	51	1,635	11,210	194	1,471	127	90,105
2002	5,379	332	23,644	48,454	3,303	787	135	113	28	7,965	381	30	525	4	2,357	10,387	235	700	(127)	(104,887)
2003	6,861	(126)	(20,954)	(36,114)	(627)	(922)	(106)	144	28	7,166	59	16	524	44	2,214	14,102	85	(2,400)	(127)	(92,620)
2004	(7,856)	(61)	(17,547)	(32,255)	(7,200)	(772)	(65)	(68)	(104)	(4,988)	126	12	360	1	1,506	13,346	160	(2,400)	(127)	(88,955)
2005	(4,829)	(61)	(19,615)	(16,883)	(859)	(772)	(65)	(520)	(0)	(4,692)	66	20	(304)		(1,719)	8,413	170	(2,400)	(127)	(61,515)
2006	(5,819)	(61)	(19,615)	(17,000)	(859)	(772)	(65)	(520)	(0)	(4,692)	(22)	(3)	(274)		(291)	(12,590)	(86)	(2,400)	(127)	(65,198)

¹ Data are from the 2nd ISC Albacore Working Group, November 28 - December 5, 2006 except as noted.

² Catches for 2000-2004 contain estimates of offshore longline catches from vessels landing at domestic ports.

³ Other longline catches from vessels flying flags of convenience being called back to Taiwan. The catches may be duplicated in Taiwan longline catches (November 2005).

⁴ Grand total includes minor amounts caught by other fisheries not listed here

Table 2. South Pacific albacore catches (in metric tons) by fisheries, 1987-2006¹. Blank indicates no effort. -- indicates data not available. 0 indicates less than 1 metric ton. Provisional estimates are in parentheses.

YEAR	JAPAN		TAIWAN	KOREA	U.S.		CANADA	NEW ZEALAND			FRENCH POLYNESIA		AUSTRALIA		NEW CALEDONIA	TONGA	FIJI	WESTERN SAMOA	SOLOMON ISLANDS	VANUATU	CHINA	OTHER		GRAND TOTAL ⁹
	LONG ² LINE	POLE & LINE	LONG LINE	LONG LINE	LONG ³ LINE	TROLL	TROLL	LONG LINE	POLE & LINE	TROLL ⁴	LONG LINE	TROLL ⁵	LONG LINE	TROLL ⁶	LONG LINE	LONG LINE	LONG LINE	LONG LINE	LONG LINE	LONG LINE	LONG LINE	LONG ⁷ LINE	TROLL ⁸	
1987	4,103	9	15,009	1,914		838		9		1,256			129	11	563	252					0			25,012
1988	6,914	0	17,120	3,316	1	3,656	235	4		405			107	12	584	242					0			37,867
1989	5,353	0	10,867	1,178		3,672	235	523		4,361		102	93	13	566	195	3				0			49,116
1990	5,466	0	11,621	690		3,886	235	170	242	2,555	20	299	124	15	1,053	152	68				4			34,026
1991	4,700	0	16,517	536	1	4,894	235	85	9	2,350	100	326	158	20	909	171	208				0		4	32,617
1992	5,268	0	22,229	1,343		2,956	235	209	6	3,265	195	72	214	70	692	199	243				0			37,196
1993	8,294	12	18,469	558	0	1,010	235	345	60	2,971	714	45	186	55	755	231	463	213			1			34,617
1994	8,883	2	19,726	1,073	1	2,270	235	635	62	4,609	913		357	70	840	343	842	641			8	23	46	41,579
1995	7,350	0	15,316	1,184	27	1,951	235	810	136	5,339	772	183	438	25	332	379	702	1,883	24	109	5	38	47	37,300
1996	4,538	0	10,858	1,020	86	1,947	136	1,079	26	5,215	1,463	69	408	50	414	431	1,446	1,775	100	192	8	43	186	31,511
1997	4,797	12	10,156	1,144	309	1,739	149	847	0	2,767	2,595	102	258	50	277	493	1,842	4,108	109	95	2	101	327	32,278
1998	7,830	38	10,532	4,484	446	1,618	167	2,057	1	4,463	3,189	38	478	60	860	616	2,121	4,742	370	10	1	104		44,225
1999	3,872	100	10,418	733	338	1,339	253	2,103	0	1,799	2,580	61	373	50	690	801	2,279	4,027	136	--	3,473	129	95	35,649
2000	3,004	22	10,235	589	626	2,433	351	1,344	72	3,336	3,473	97	381	50	895	862	6,065	4,067	224	--	2,056	159	372	40,713
2001	4,929	18	12,330	2,101	3,233	2,107	207	2,614	4	3,431	4,261	155	591	59	1,020	1,268	7,971	4,820	54	655	2,711	126	187	54,851
2002	5,425	11	12,796	3,742	5,951	1,337	144	2,545	0	2,828	4,557	106	553	52	1,165	1,189	8,026	4,223	127	6,756	2,920	1,032	70	65,555
2003	4,895	7	(14,105)	1,606	(3,931)	1,573	(144)	(2,971)	(0)	(3,435)	3,846	(289)	490	51	1,111	611	6,881	2,253	122	(4,903)	(6,223)	2,312	54	61,813
2004	(4,798)	(7)	(13,307)	(804)	(2,462)	(1,141)	(63)	(1,248)	(0)	(3,511)	(2,164)	N/A	667	51	1,469	182	11,290	1,232	267	(9,566)	(6,104)	3,575		63,908
2005	N/A	N/A	N/A	N/A	(2,924)	(487)	(63)	(634)	(0)	(2,789)	(2,425)	N/A	743	51	1,590	283	8,901	1,263		(9,339)	(4,103)	4,397		39,992
2006	N/A	N/A	N/A	N/A	(4,176)	(585)	(63)	(634)	(0)	(2,789)	(2,425)	N/A	(743)	(51)	(1,590)	(283)	(8,901)	(1,263)		(9,339)	(4,103)	(4,397)		41,342

¹ Data are from the Western and Central Pacific Fisheries Commission Tuna Fishery Yearbook 2005, except as noted.

² Japan longline catches include catches from Australia-Japan joint venture vessels.

³ 2004 and 2005 U. S. longline catches are from the Al Coan, pers. comm.

⁴ 1990 - 2001 New Zealand troll include unclassified vessels. Troll catches are seasonal estimates (November through May)

⁵ French Polynesia troll catches include catches from Bonitier and Poti Marara vessels.

⁶ Australia troll catches from 1970 to 1980 are incidental catches from pole-and-line vessels targeting southern bluefin tuna. 1981-2002 catches include recreational catches.

⁷ "Other" includes Cook Islands and Papua New Guinea.

⁸ "Other" includes Fiji, Cook Islands, Belize, Sweden, Tonga, and Ecuador.

⁹ Grand Total includes catches from gill net fisheries for the years when those fisheries existed

Table 3. Fishery statistics for the U.S. North Pacific albacore troll fishery.

FISHING SEASON	NO. TRIPS		CATCH (Metric Tons)		NO. FISH LANDED		AVG FL (cm)	AVG WT (lb)	EFFORT		CPUE (fish/day)	SAMPLING COVERAGE	
	TOTAL	SAMPLED	TOTAL	SAMPLED	TOTAL	MEASURED			NO. DAYS	NO. VESSELS		LOG	L-F
1996	1,816	413	16,938	7,049	2,918,060	32,144	66	12.8	32,717	676	89	42%	1.1%
1997	4,000	496	14,252	5,437	2,050,302	31,223	70	15.3	45,572	1,172	45	38%	1.5%
1998	2,358	272	14,410	5,061	2,217,166	15,603	68	14.3	21,445	841	103	35%	0.7%
1999	2,555	393	10,060	3,549	1,246,107	14,263	73	17.8	34,643	776	36	35%	1.1%
2000	1,880	411	9,645	3,768	1,448,103	11,540	69	14.7	37,428	645	39	39%	0.8%
2001	2,824	480	11,210	5,479	1,739,301	13,907	68	14.2	26,566	860	65	49%	0.8%
2002	1,868	350	10,387	3,942	1,693,585	11,766	67	13.5	25,441	644	67	38%	0.7%
2003	2,370	352	14,102	4,932	1,758,146	9,156	73	17.7	23,442	729	75	35%	0.5%
2004	2,400	516	13,346	4,927	2,086,184	30,503	68	14.1	24,543	695	85	37%	1.5%
2005	1,584	1,078	8,413	5,440	1,193,392	20,434	70	15.5	25,298	541	47	65%	1.7%
2006	1,875	1,164	12,590	8,254	1,964,605	43,203	68	14.1	21,778	604	90	66%	2.2%

Table 4. Fishery statistics for the U.S. South Pacific albacore troll fishery.

FISHING SEASON	NO. TRIPS		CATCH ¹ (Metric Tons)		NO. FISH LANDED		AVG FL (cm)	AVG WT (lb)	EFFORT		CPUE (fish/day)	SAMPLING COVERAGE	
	TOTAL	SAMPLED	TOTAL	SAMPLED	TOTAL	MEASURED			NO. DAYS	NO. VESSELS		LOG ²	L-F
1995-1996	55	31	1,964	1,119	285,075	2,069	70	15.2	4,145	53	69	57%	0.7%
1996-1997	26	18	1,617	956	252,422	1,215	68	14.1	3,063	26	82	59%	0.5%
1997-1998	38	31	1,701	1,100	277,050	200	67	13.5	5,384	36	51	65%	0.1%
1998-1999	24	12	1,241	516	173,549	689	70	15.8	2,505	21	69	42%	0.4%
1999-2000	39	26	2,562	1,578	339,768	1,255	72	16.6	4,957	36	69	62%	0.4%
2000-2001	39	30	2,128	1,449	289,517	3,416	71	16.2	6,377	33	45	68%	1.2%
2001-2002	12	10	1,218	426	166,338	513	71	16.1	3,602	12	46	35%	0.3%
2002-2003	14	11	1,678	912	230,849	1,229	71	16.0	2,286	14	101	54%	0.5%
2003-2004	12	12	995	840	171,061	811	66	12.8	1,487	11	115	84%	0.5%
2004-2005	8	8	725	402	95,605	102	72	16.7	1,494	8	64	55%	0.1%
2005-2006	10	10	601	564	80,869	403	71	16.4	1,266	8	64	94%	0.5%

¹ Total catches for U.S. South Pacific albacore troll fishery may include catch from November and December of the previous year. Total catches for seasons before 1996-97 may contain catch from non-U.S. vessels.

² Logbook sampling coverage rates are estimated as hailed logbook catches divided by total catch so may not be 100% despite logbook submissions being mandatory

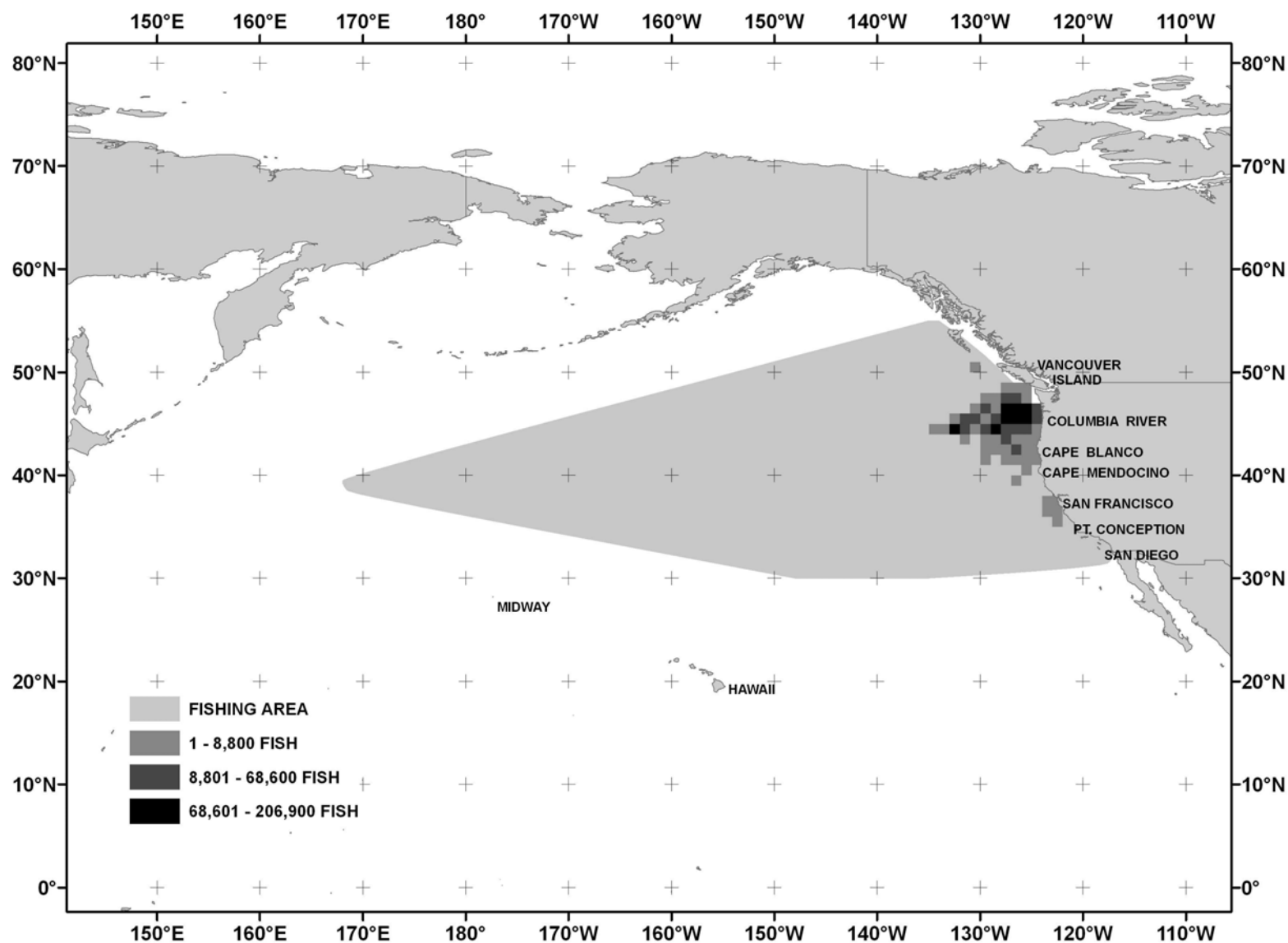


Figure 1. Distribution of albacore catches by U.S. troll vessels in the 2006 North Pacific season.

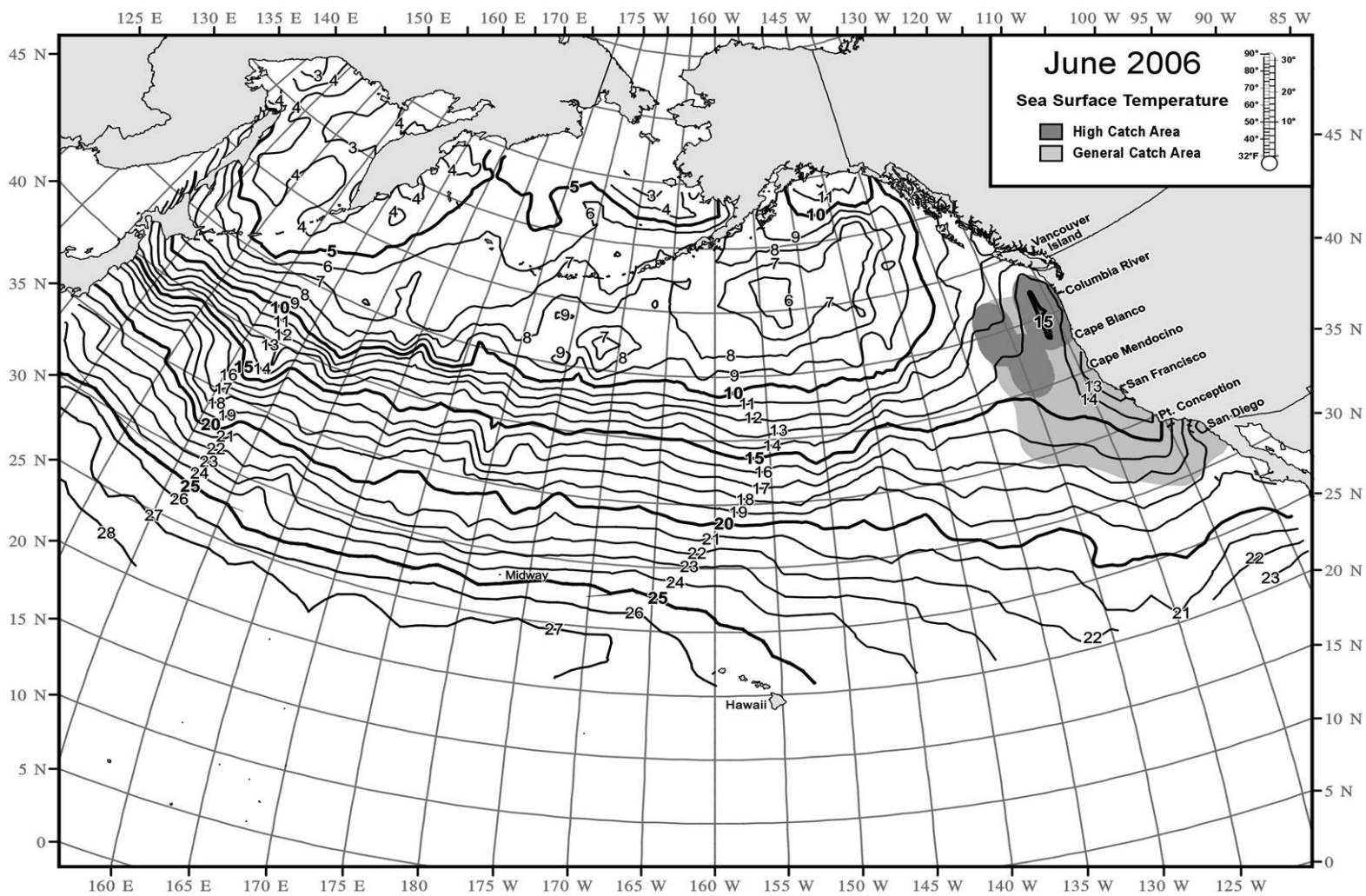


Figure 2a. Distribution of albacore catches and sea surface temperatures in the North Pacific, June 2006.

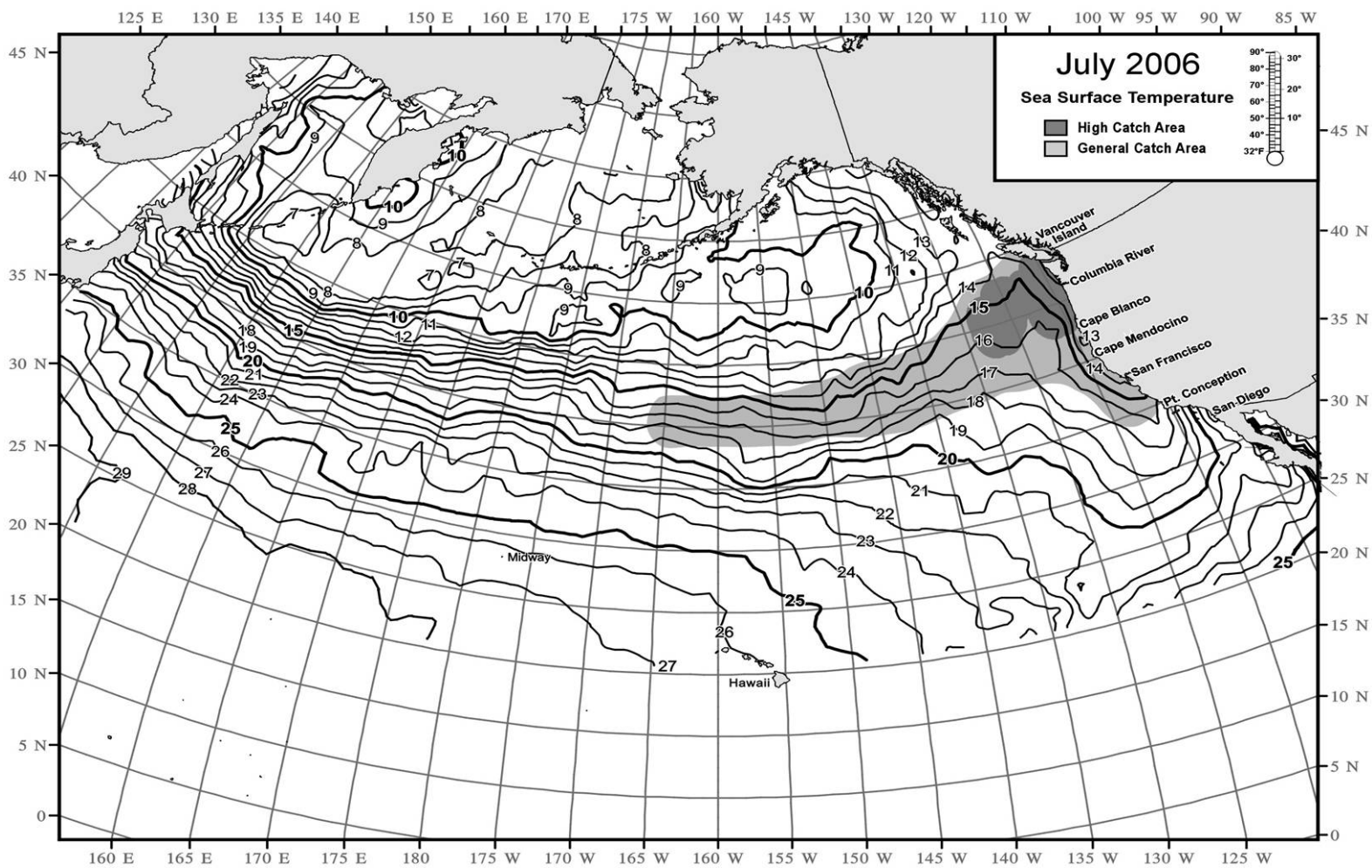


Figure 2b. Distribution of albacore catches and sea surface temperatures in the North Pacific, July 2006.

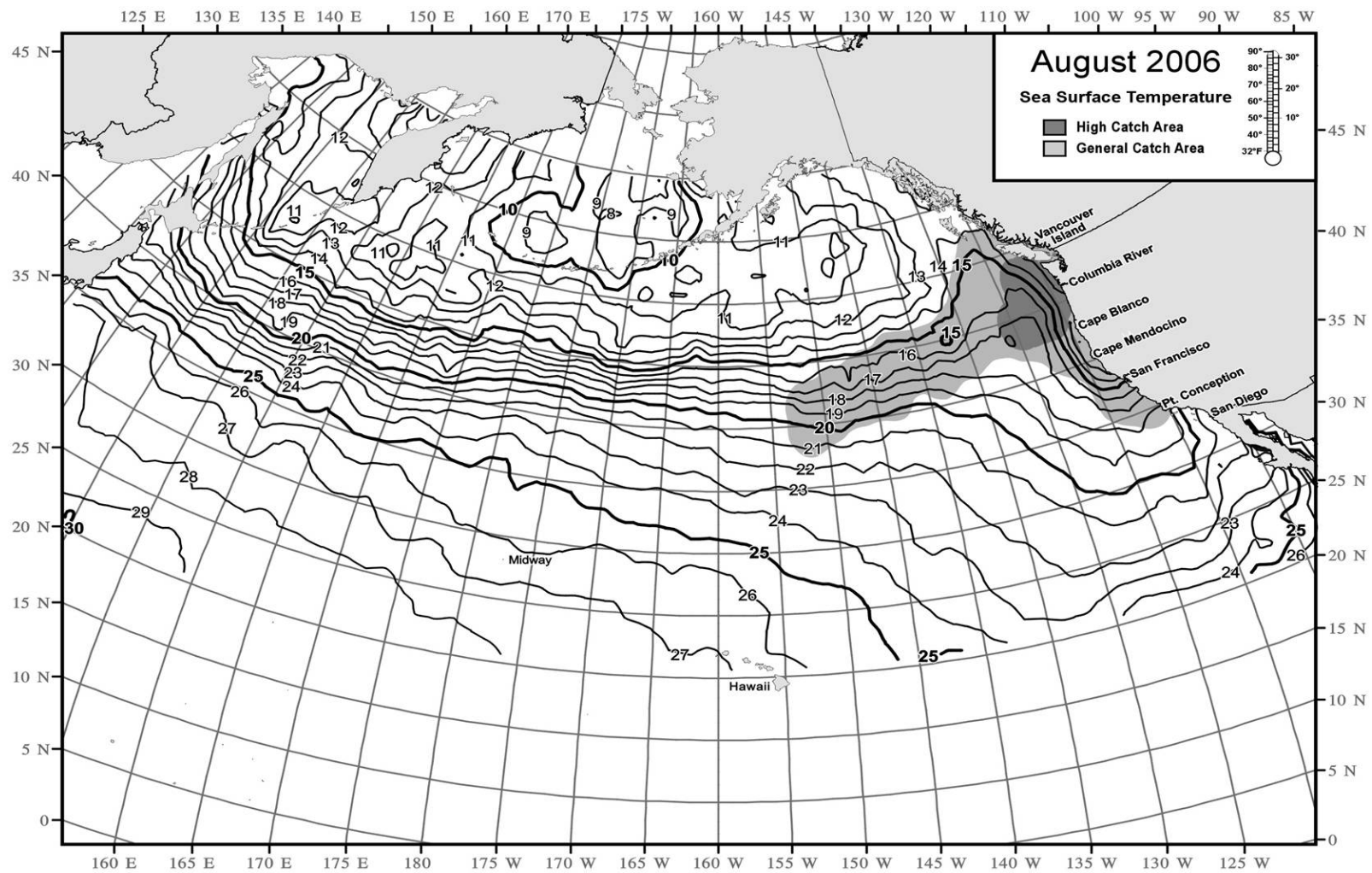


Figure 2c. Distribution of albacore catches and sea surface temperatures in the North Pacific, August 2006.

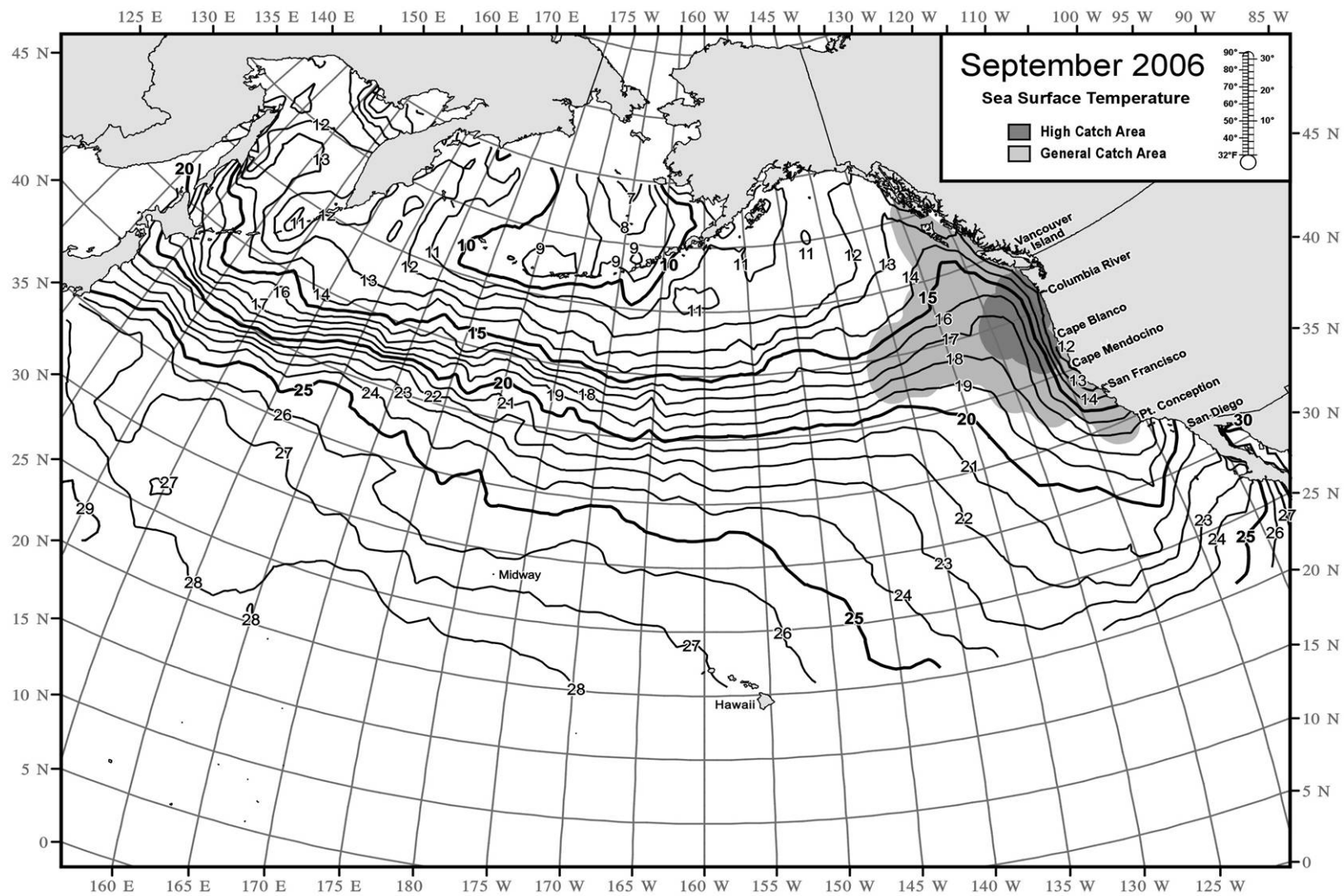


Figure 2d. Distribution of albacore catches and sea surface temperatures in the North Pacific, September 2006.

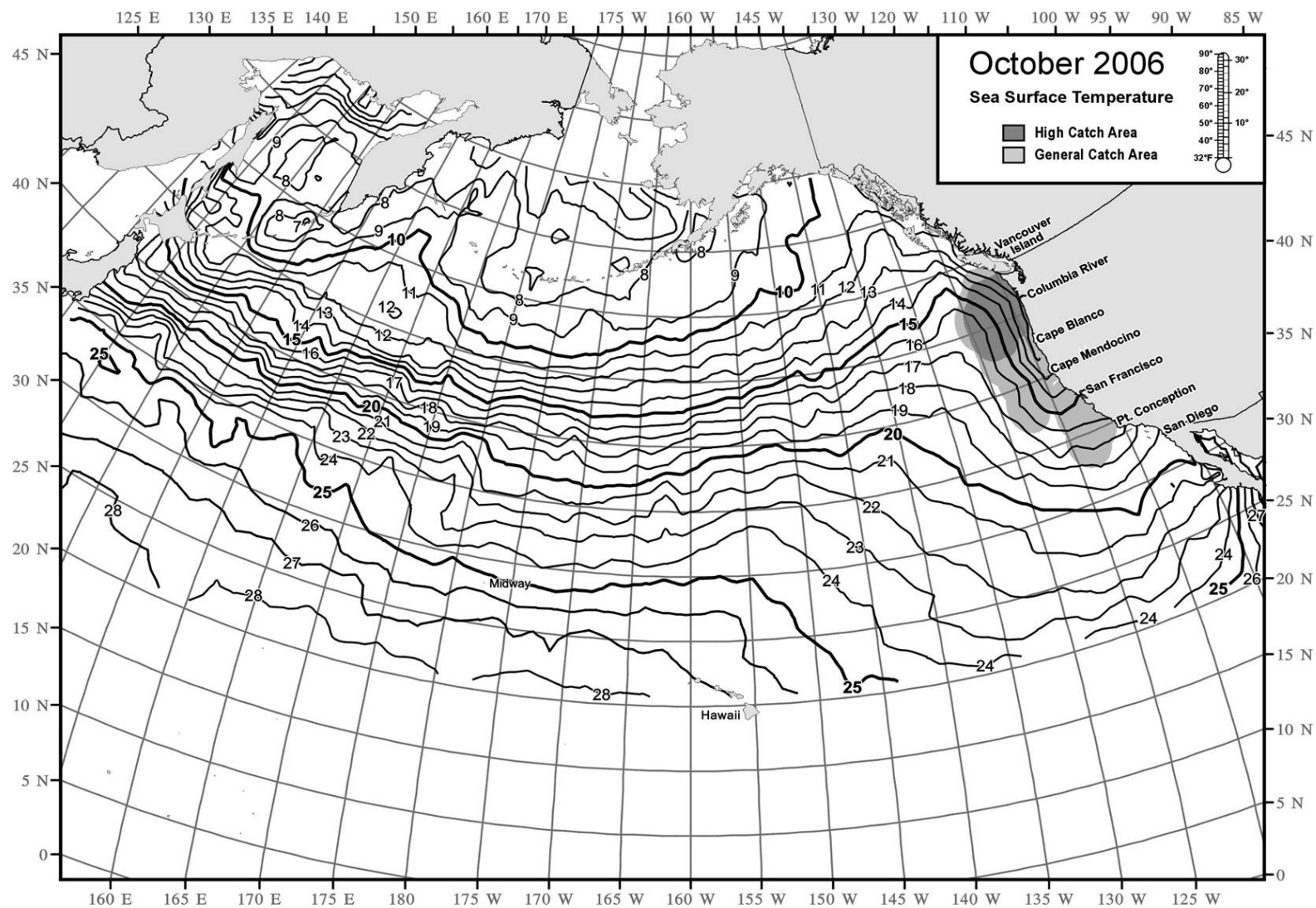


Figure 2e. Distribution of albacore catches and sea surface temperatures in the North Pacific, October 2006.

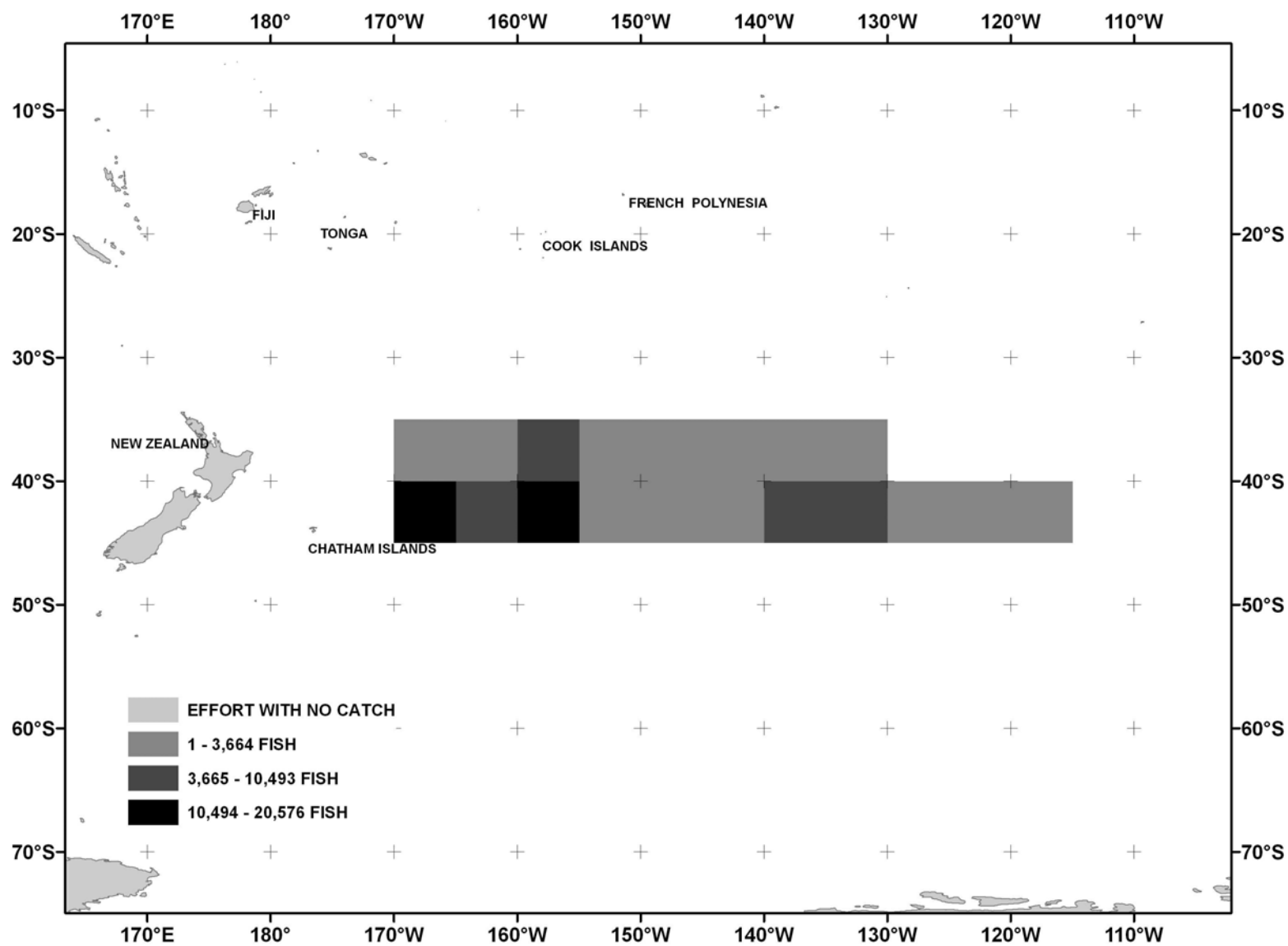


Figure 3a. Distribution of albacore catches by U.S. troll vessels in the 2005-2006 South Pacific season.

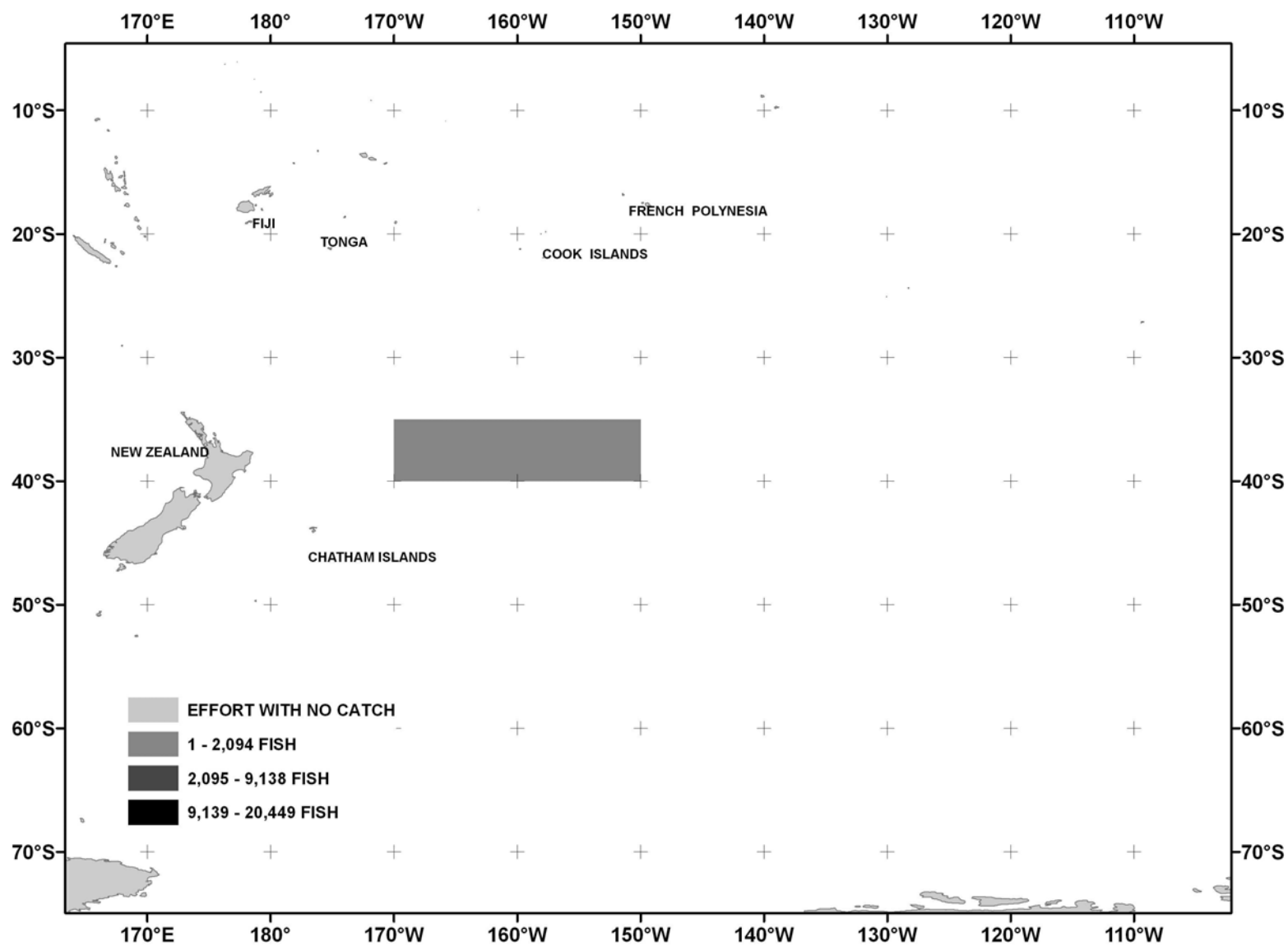


Figure 3b. Distribution of albacore catches by U.S. troll vessels in the South Pacific, December 2005.

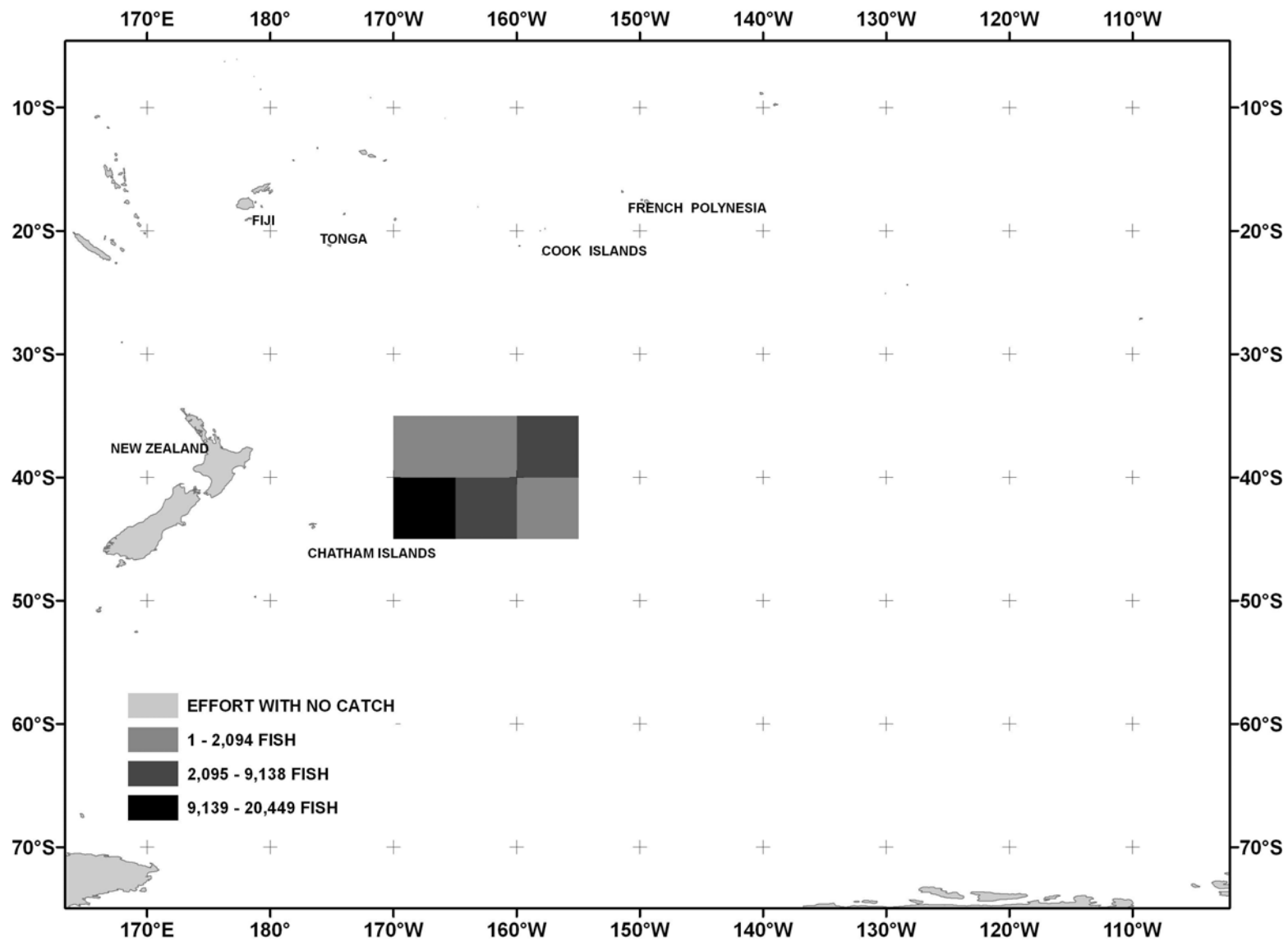


Figure 3c. Distribution of albacore catches by U.S. troll vessels in the South Pacific, January 2006.

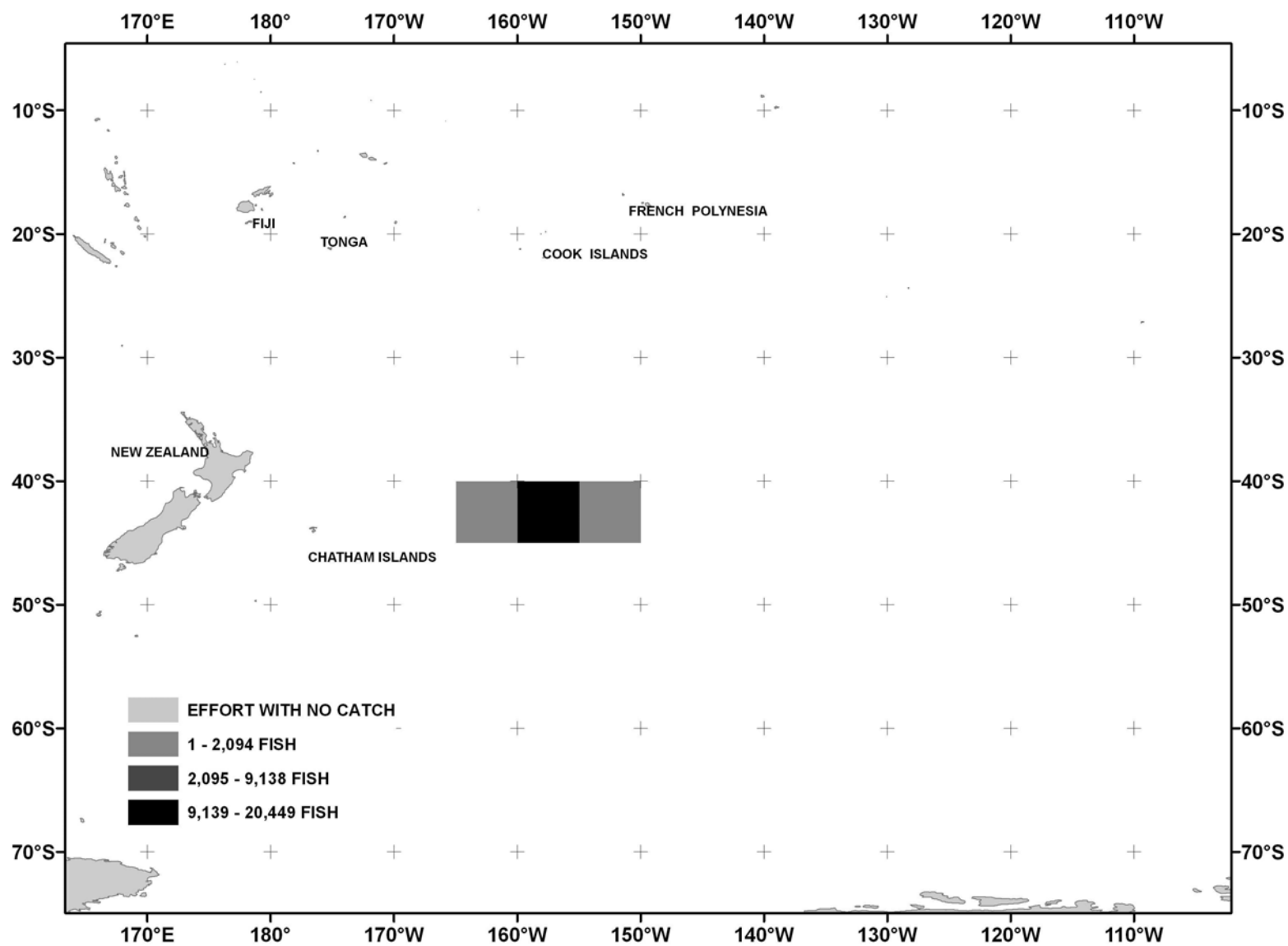


Figure 3d. Distribution of albacore catches by U.S. troll vessels in the South Pacific, February 2006.

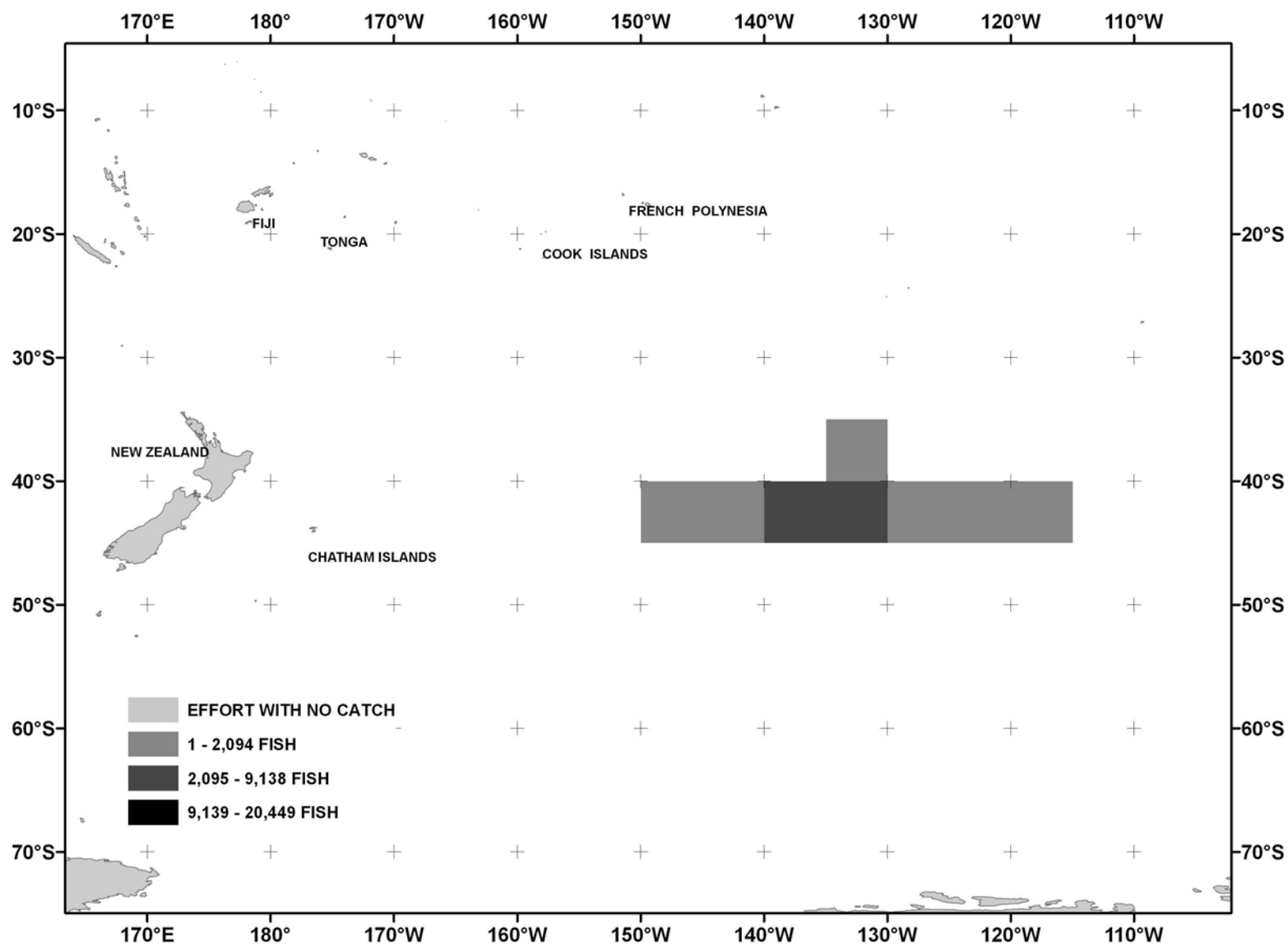


Figure 3e. Distribution of albacore catches by U.S. troll vessels in the South Pacific, March 2006.

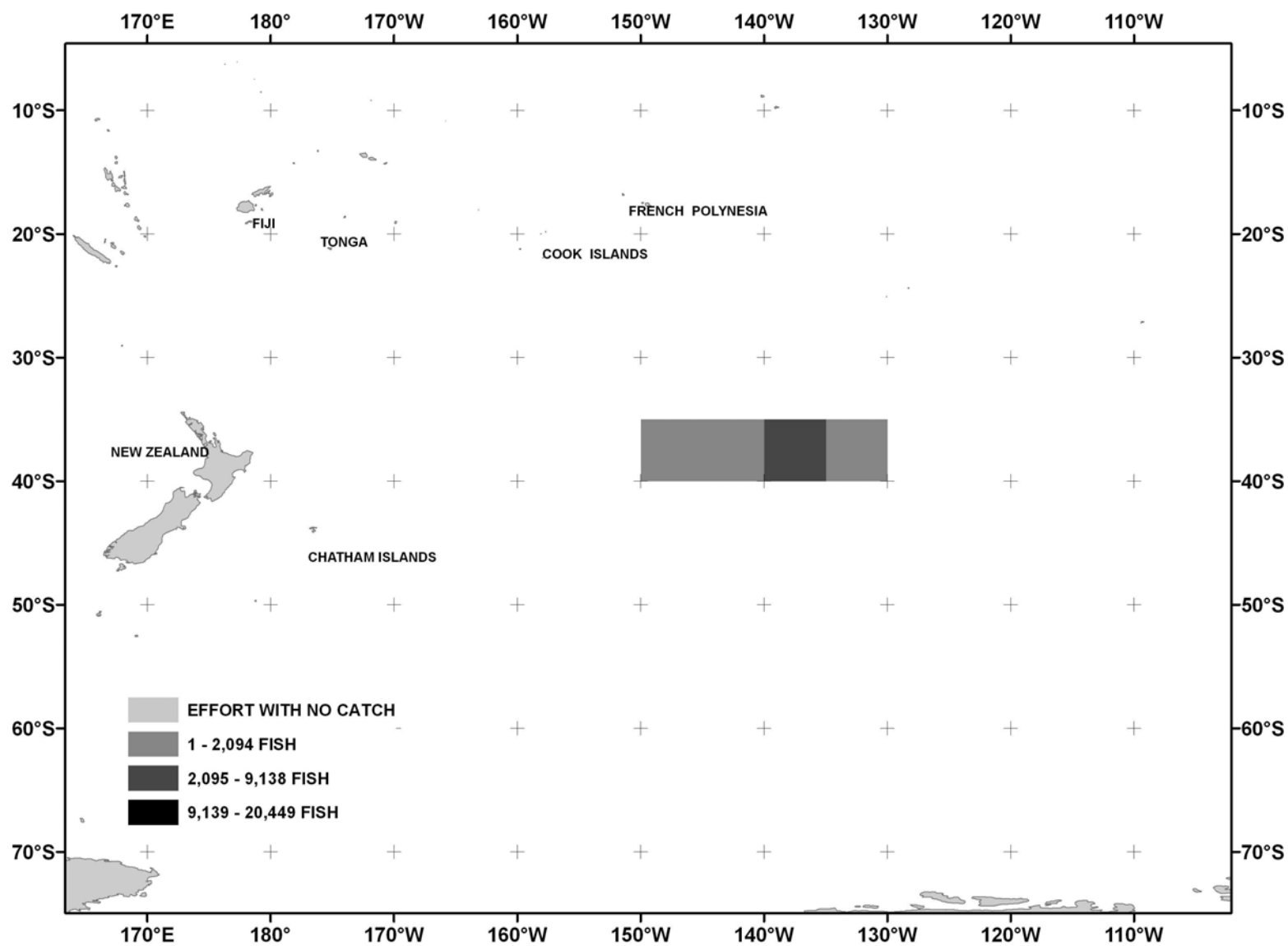


Figure 3f. Distribution of albacore catches by U.S. troll vessels in the South Pacific, April 2006

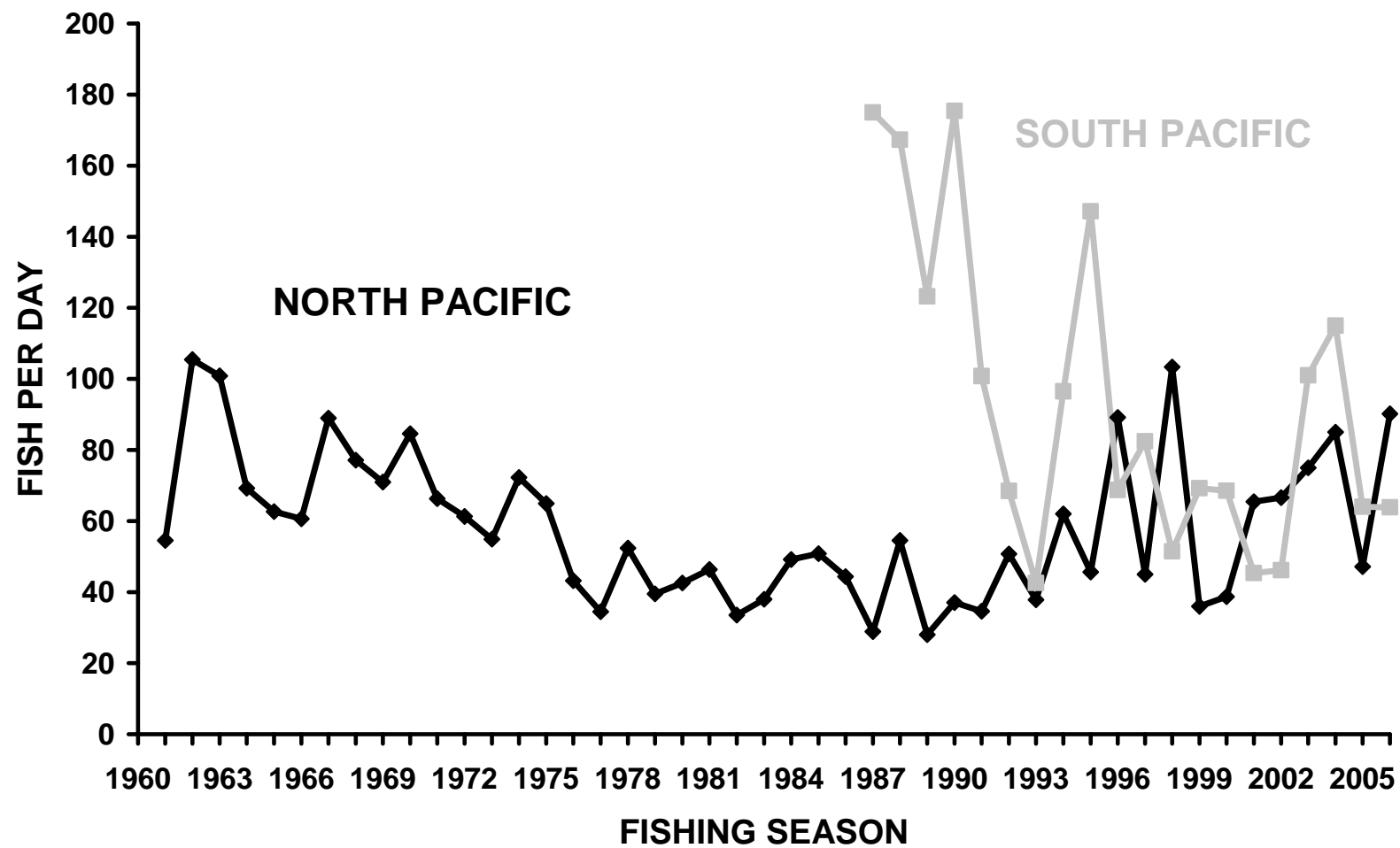


Figure 4. North and South Pacific albacore CPUEs by U.S. troll vessels from 1961 through 2006.

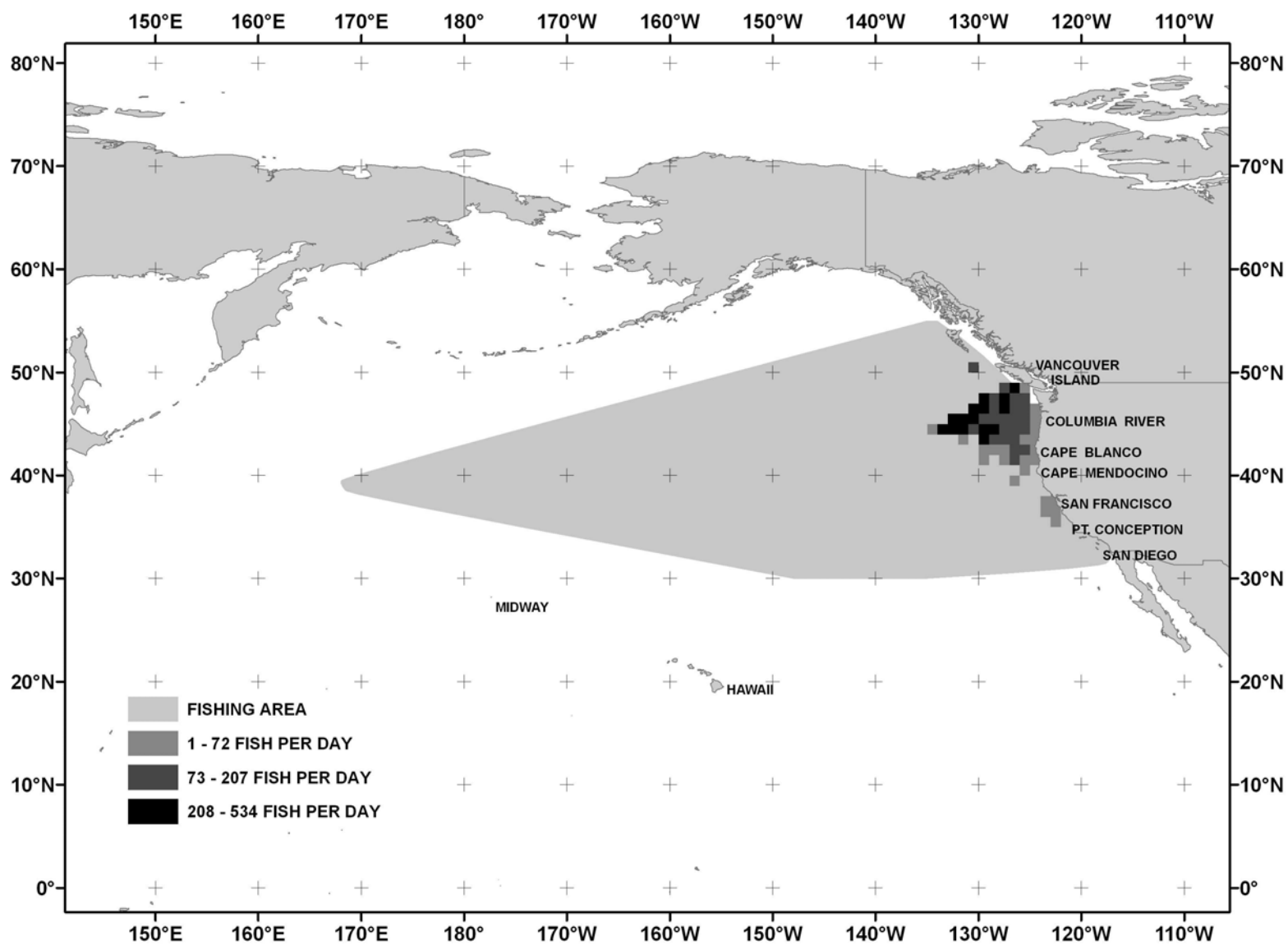


Figure 5. Distribution of albacore CPUEs by U.S. troll vessels in the 2006 North Pacific season.

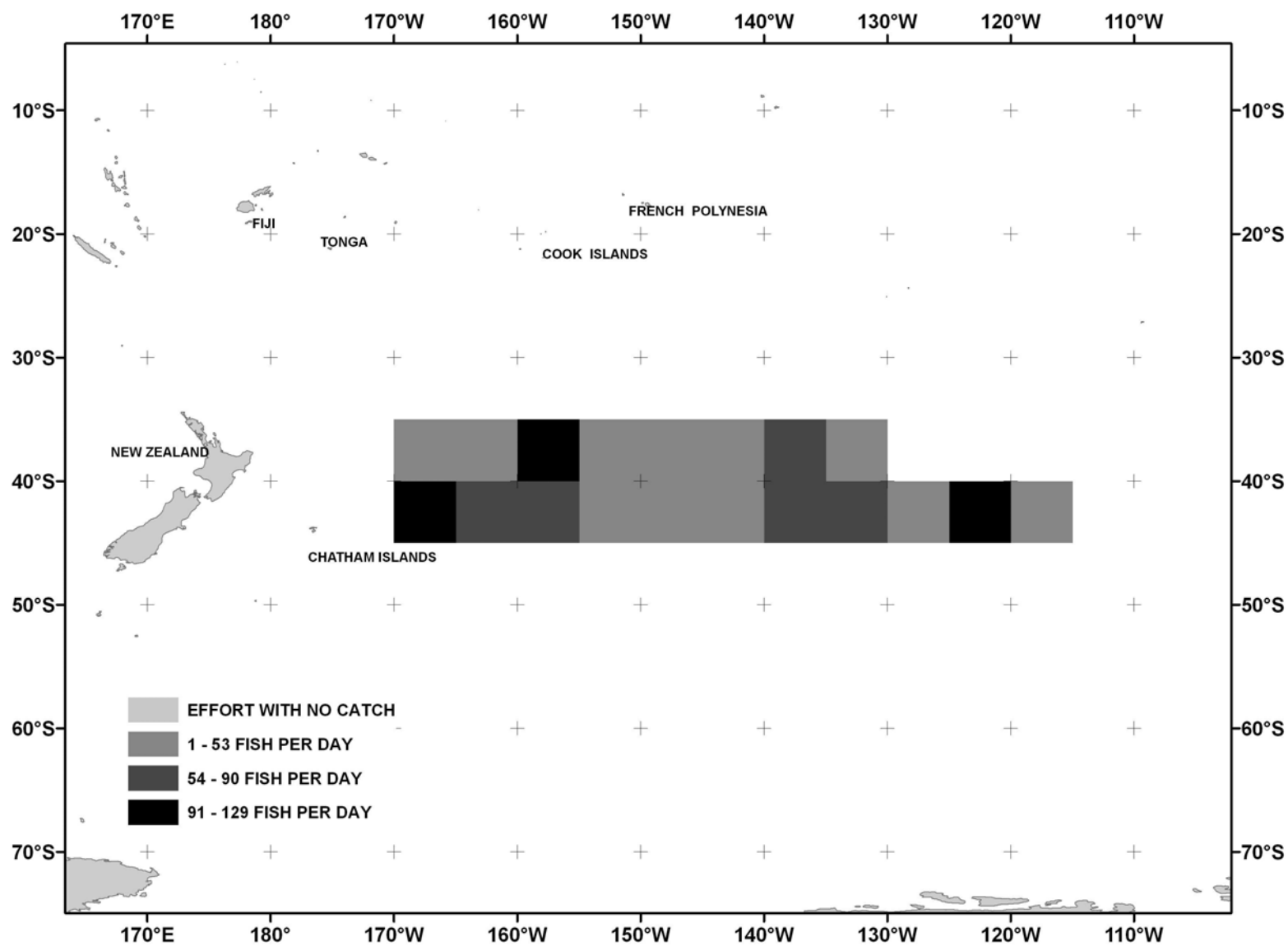


Figure 6. Distribution of albacore CPUEs by U.S. troll vessels in the 2005-2006 South Pacific season.

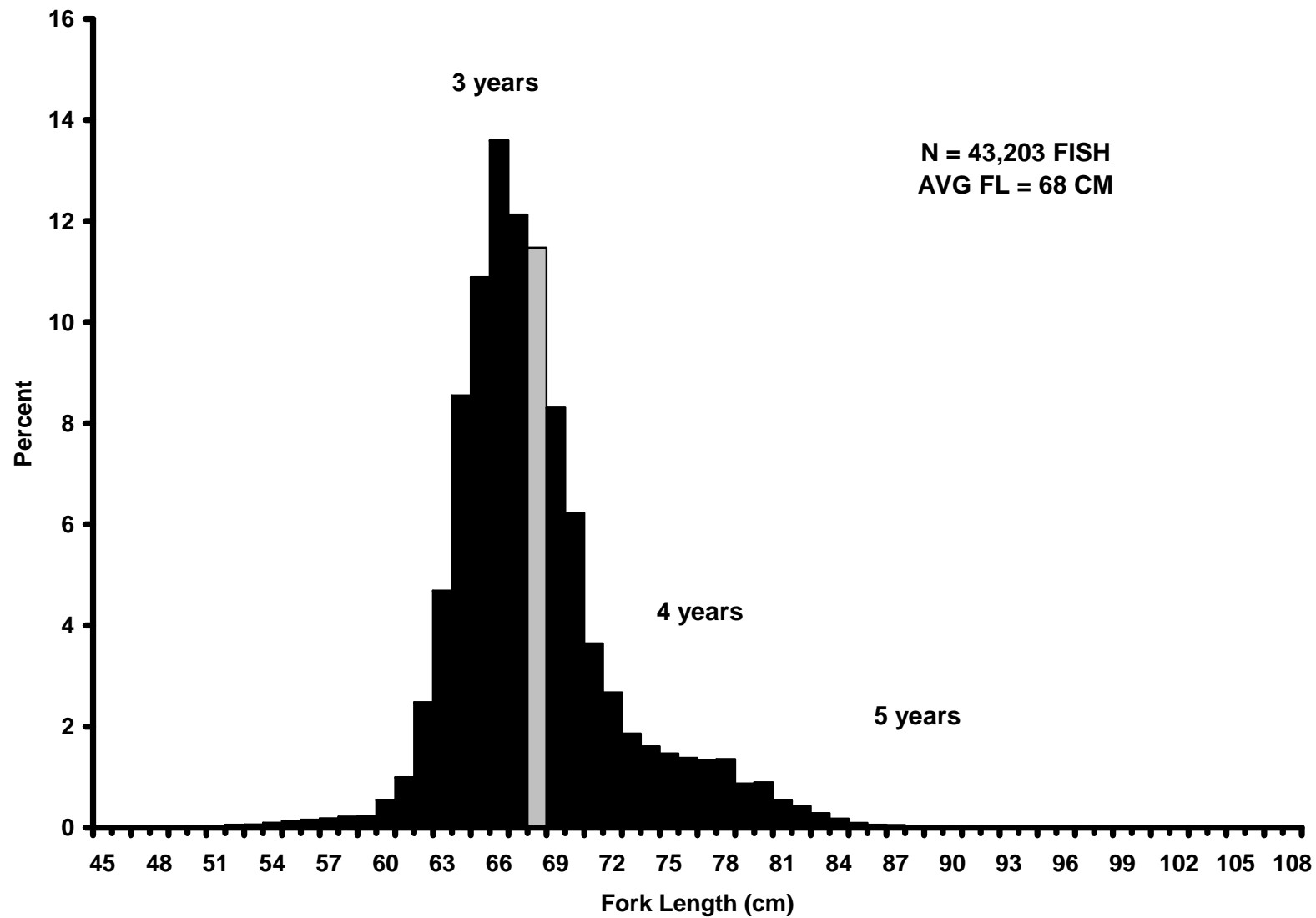


Figure 7. Length-frequency histogram of North Pacific albacore caught by U.S. troll vessels during the 2006 season.

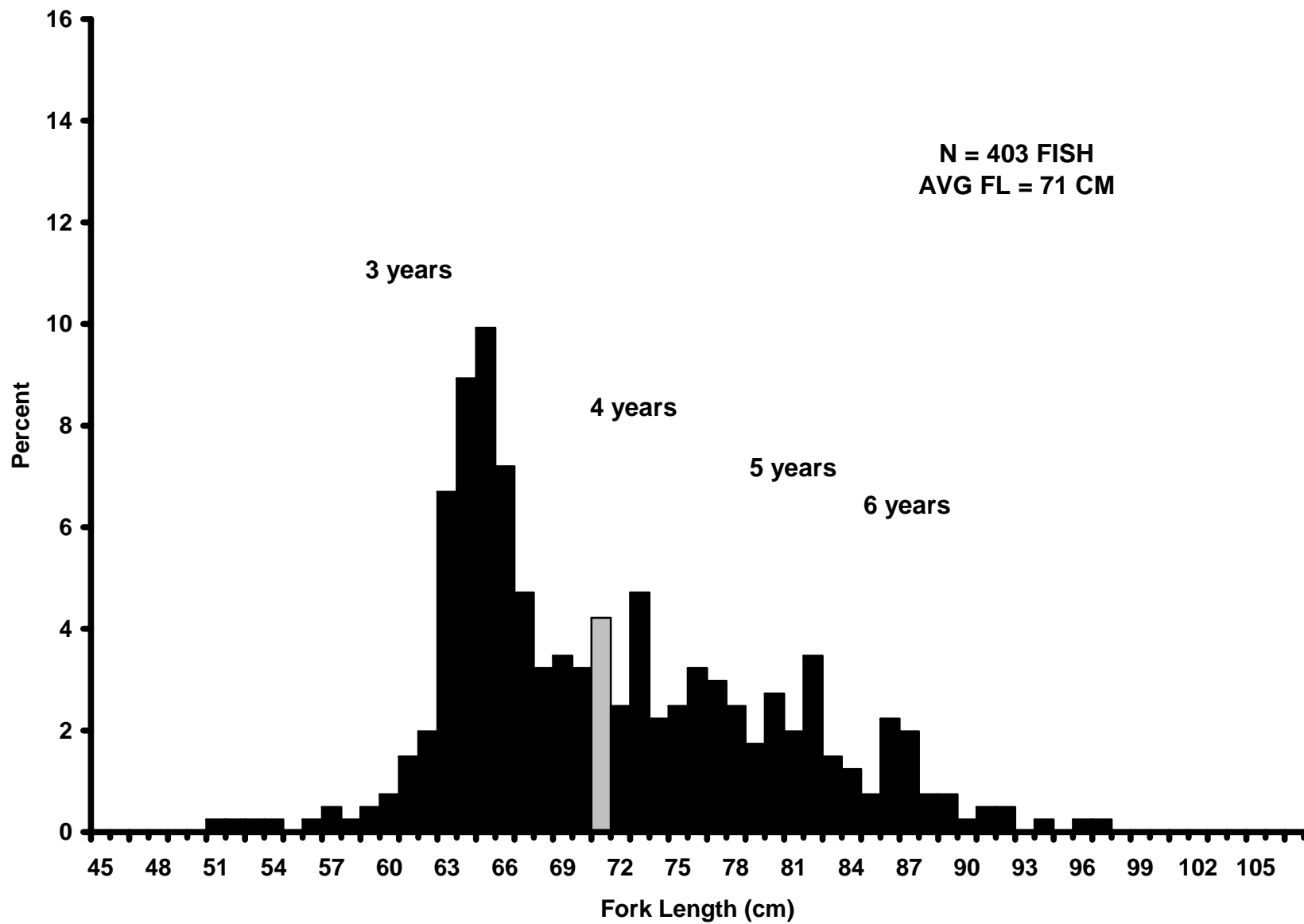


Figure 8. Length-frequency histogram of South Pacific albacore caught by U.S. troll vessels during the 2005-2006 season.